REMARKS/ARGUMENTS

Claims 1-9 are pending. Re-examination and reconsideration of the pending claims are respectfully requested.

Substantive Rejections

Claims 1-5, and 9 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,093,832 issued to Bethune et al. in view of U.S. Patent No. 5,416,867 issued to Thorsten et al. Claims 6-8 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,093,832 issued to Bethune et al. in view of U.S. Patent No. 5,416,867 issued to Thorsten et al., and further in view of U.S. Patent No. 5,742,626 to Meade et al. Such rejections are traversed as follows.

Independent claim 1 is directed to a laser system comprising a non-linear optic (NLO) effecting a conversion of a first frequency of a laser beam to a second frequency. In particular, the laser system comprises a first member having a first thermal coefficient of expansion, the first member being coupled to the NLO so that thermal expansion in a dimension of the first member effects a change in the angle of the NLO as the temperature of the NLO changes. The use and advantages of passively controlling the angle of the NLO by use of a thermally-coupled expansion member can be understood with reference to the associated text on page 3, lines 3-14 and 24-35. As explained in the specification, passive control of the NLO provides efficient energy conversion and accurate laser output without the use of costly active feedback and control systems.

The present invention is patently distinguishable from the combination of Bethune et al. in view of Thorsten et al. because the requisite suggestion or motivation to combine the references are absent. The Bethune et al. reference is directed to a laser frequency conversion system having a temperature controlled crystal. The Bethune et al. system fails to disclose a passive control system utilizing thermally expansive members thermally coupled to an optic. To cure this deficiency, Examiner relies on Thorsten et al. for suggesting the use of "differential thermal expansion members." As applicants understand the reference, Thorsten et al. discloses a

passive temperature compensated optical wageguide coupler comprising a optic element holder. Col. 2, lines 33-38. The element holder has two portions with different coefficients of expansion that cause the element holder to bend, thereby orienting the angle of the optic, as the temperature in the system varies. Col. 3, line 54 to Col. 4, line 3. As conceded by the Examiner, Bethune et al. describes a "feedback" driven "temperature control means." Office Action dated October 7, 2003, page 3. The temperature control means "maintain[s] the crystal at the critical phase matching temperature," and provides "temperature locking." Bethune et al., col. 2, lines 24-31. Because the temperature of the Bethune et al. optic remains constant, therefore keeping the angular orientation and output constant, one skilled in the art would not be motivated to combine it with a system that angularly orients the optic in response to temperature gradients, as disclosed in Thorsten et al. Bethune et al. actually teaches away from incorporating the Thorsten et al. system because the Bethune system strives to eliminate the thermal gradients in the optic that form the basis for the operability of temperature-sensitive expansion members.

In support of the proposed combination, the Office Action asserts that "the teaching in Thorsten et al. is clearly applicable to any transmissive optical element wherein angular orientation is critical." However, as explained above, the Bethune et al. reference does not change the angular orientation in response to the optic's temperature, but rather keeps the temperature of the optic constant through a feedback-control system so as to not change the angular output of the laser. Therefore, the passive control system of Thorsten et al. is not applicable to active NLO compensation systems that rely on monitoring of sensor data, and is certainly not applicable to the active temperature control system disclosed in Bethune et al.

Furthermore, the Office Action indicates there may be some misunderstanding of the presently claimed invention. Specifically, the Office Action states Bethune et al. does not disclose that "temperature controlling members having appropriate coefficient of thermal expansion are used to control the temperature of the nonlinear optical crystal." Office Action, page 3. The thermally expansive member of claim 1 effects change in the angle of the NLO in response to a change in the NLO's temperature, and does not control the temperature of the NLO. Regardless, Applicants fail to identify even a remote suggestion or motivation for combining the

passive temperature compensated optical wageguide coupler of Thorsten et al. with the active temperature controlled frequency conversion system of Bethune et al. so as to produce the presently claimed invention. Hence claim 1 (and dependent claims 2-7) are allowable.

Independent claim 9 recites a method comprising generating a laser beam at a first frequency and converting the beam to a second frequency with a NLO. In particular, claim 9 recites, in part, passively compensating for temperature -induced variations in the NLO by transferring heat from the NLO so that thermal expansion of the member adjusts the angle of the NLO. For many of the reasons set forth above for claim 1, Applicants have failed to identify any suggestion or motivation to combine the cited references, Bethune et al. and Thorsten et al., so as to meet all the steps of claim 9. Hence, Applicants respectfully request the withdrawal of the rejection and allowance of claim 9.

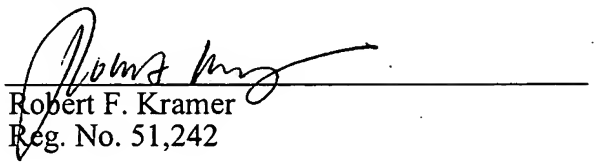
Dependent claims 6-7, and independent claim 8, each recite, among other elements, the additional aspect of a beam directing system for selectively directing the beam onto a cornea so as to effect a desired refractive change. For many of the reasons set forth above for claim 1, the requisite suggestion or motivation to combine the Bethune et al. and Thorsten et al. references are absent. In addition, Applicants have failed to identify any suggestion or motivation in Bethune et al. and Thorsten et al. for combining them with the laser eye surgery system of Meade et al. Bethune et al. discloses a semiconductor diode laser for optical data storage. Thorsten et al. discloses a optical waveguide coupler for linking two communications devices together. Neither of the references even remotely suggest using the disclosed systems for laser surgery applications. For the forgoing reasons, Applicants respectfully request allowance of claims 6-7 and 8.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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